

## **ABSTRACT OF THE DISCLOSURE**

An apparatus having an inflatable balloon near a distal end of a multi-lumen catheter, with a plurality of blood flow passageways formed through the interior of the balloon from a proximal face of the inflated balloon to a distal face of the inflated balloon. A heat transfer solution is introduced through a supply lumen of the catheter to inflate the balloon in a selected blood vessel; this allows blood to flow through the blood flow passageways of the balloon, from one exterior face of the balloon to another exterior face. The heat transfer solution continues to circulate around the blood flow passageways inside the balloon, to change the blood temperature, eventually exiting the balloon through a return lumen of the catheter.